

National Oceanic and Atmospheric Administration

The National Oceanic and Atmospheric Administration (NOAA) is contemplating the detailed design and construction of one, possibly two, new classes of Fisheries Research Vessels (FRVs). NOAA anticipates that these vessels will replace the existing fleet of aging FRVs with expanded capability using new technology and improved design. The missions for these new vessels would include stock assessment and life history, physical and biological research, habitat studies, fisheries research gear evaluation, as well as atmospheric and sea surface observations and measurement. An extensive suite of state-of-the-art gear and laboratories to support stock assessment and sampling, diving and oceanography will be required. It is anticipated that the ships will have an overall length of 55 to 65 meters, be able to carry sufficient supplies to ensure a self-sustaining 30 to 40 day voyage, and have accommodations for 38 crew members and scientists. The vessel will comply with all US and International rules and standards applicable to oceanographic research vessels. Currently, NOAA is soliciting for potential sources for design and construction. A major repair and service life extension is also planned for the NOAA ship *Miller Freeman*, which currently conducts fisheries research in the Gulf of Alaska and Bering Sea.

In early 1997, Halter Moss Point delivered the oceanographic research ship, the *Ronald H Brown*. One new oceanographic research ship is currently included in Navy's FY 1999 budget proposal.

Ship Repair and Conversion Work

The U.S. ship repair industry continues to be very active. Large and small U.S. shipyards have been successful in their competition for ship repair and conversion work in the domestic and foreign markets to supplement diminishing Navy ship repair work. U.S. shipyards have been successful in using their location, timeliness of repairs and competitive prices to gain an edge over many foreign repair yards.

U.S. private shipyards have performed a large variety of ship repair and conversion work over the past year to a large array of vessel types. A sample of the type of work performed include:

Cascade General/Portland Ship Yard reportedly performed repair work on 15 tankers and 5 cruise ships last year. They repaired tankers for BP, Keystone, Chevron and Sea River Maritime. In addition, Cascade General completed the first phase in the conversion of the *Glomar Explorer* into a deepwater oil exploration ship.

Todd Pacific Shipyards reported that it repaired 240 vessels in 1997 including emergency rudder repair work for M/V *Matsonia*; repairs to the *Manulani* following a cargo hold fire and the overhaul of the U.S. Coast Guard's icebreaker *Polar Sea*. Todd Pacific has also been involved in performing repair work on cruise ships, and has increased its repair capacity with the addition of a 16,500 ton drydock.

Baltimore Marine Industries, Inc., which opened their doors on October 3, 1997, proceeded to repair 15 vessels by the end of the year: a barge, a cruise ship, an oceangoing yacht, a dredge, a tug, a Liberty ship, a Military Sealift Command (MSC) vessel, and 4 RRF vessels in the Port of Baltimore, a domestic cargo vessel and 3 foreign cargo vessels.

Atlantic Dry Dock contracted to convert the Bahamian flag RO/RO *Tarago* to a Marine Corps Pre-positioning ship. About 3,400 tons of steel will be used to refit the 230 meter vessel.

Atlantic Marine's Alabama shipyard reportedly completed repairs on 40 vessels last year with about a third of them for international customers.

The continued high level of activity in the U.S. offshore oil and gas industry has created a need for additional ship repair and conversion services, as well as increased maintenance capabilities. There has been a great deal of consolidation activity within the Gulf Coast shipbuilding and repair, as well as the expansion of shipyard capabilities achieved through the increase in shipyard property and capital equipment, i.e., production facilities and drydocks. The Gulf Coast shipyards have reported that the demand for repair and construction work, in conjunction with an active building market, has resulted in the continued shortage of skilled labor on the Gulf Coast.

Some examples of the variety of repair and conversion work being performed by U.S. shipyards in support of the offshore oil and gas industry include:

Bender converted the *Ken Tide* for Tidewater Marine, performed major steel work on the rig *Falrig 77* for Falcon Drilling and performed modifications to the seismic vessel *Western Atlantic* for Western Geophysical.

Ingalls completed repair work on the *Dolphin Titan 110*, a 43 meter offshore jack-up rig, owned by Sundowner Offshore Services. The rig was brought ashore for horizontal welding and repair work on its four 58 meter legs.

Atlantic Marine won a contract to convert the tanker *Cora* to a dynamically positioned early production vessel for Protexa of Mexico.

Another major ship repair market is the U.S. Navy. Each year the Navy accomplishes maintenance and modernization work on its ships in both the public and private shipyards. In FY 1997, the Navy completed 101 availabilities (overhaul/repair work) with a budgeted value of \$1.8 billion. Of these, 37 availabilities were accomplished in the Naval shipyards for a budgeted value of \$871 million, 48 percent of the budgeted amount, while the private sector completed 64 smaller, less complex availabilities, reflecting approximately \$959 million, 52 percent of the budgeted value.

The FY 1998 Navy Maintenance and Modernization budget projection is for 94 scheduled availabilities with a total value of \$2.0 billion. The Naval shipyards are scheduled to accomplish 33 availabilities representing approximately \$1.33 billion or 66 percent of the budgeted value. The private sector's shipyards are scheduled to accomplish 61 smaller, less complex availabilities representing \$697 million or 34 percent of budgeted value.

Prior to 1985, Navy repair work was either allocated directly to public yards or awarded to private yards. A significant portion of Naval ship repair work is still distributed on an allocation basis.

Naval Base Closure and Realignment

In 1990, the Congress established a new set of procedures for military base closures (Title XXIX of P.L. 101-510). These procedures were valid for only five years with closures being proposed every other year -- 1991, 1993, and 1995. As a result of the Commission's recommendations, four of the eight naval shipyards in the United States were closed: the Philadelphia Naval Shipyard closed on September 30, 1995, after a 194 year history; the Charleston Naval Shipyard and the Mare Island Naval Shipyard closed on March 31, 1996; and the Long Beach Naval Shipyard closed on September 30, 1997. The closure of Navy shipyard facilities is having an impact on both public and private shipyards.

Since the completion of the first three rounds of base closures, which included the closing of the four naval shipyards listed previously, several commercial ventures have acquired and are redeveloping, or leasing facilities, at the former naval shipyards. These private ventures may include the improvement of the existing facilities, either for shipbuilding and repair, or other commercial ventures, and in some cases may provide employment opportunities for skilled and unskilled workers idled as a result of the base closures.

In the case of the Charleston Naval Shipyard, two private shipyards, Braswell Services Group, Inc., and Detyens Shipyard, Inc., have leased facilities at the shipyard from the Charleston Naval Shipyards Redevelopment Association for the repair of ships.

In late 1997, Kvaerner Masa, a Norwegian shipbuilder, acquired the rights to a portion of the southern end of the former Philadelphia Naval Shipyard. Kvaerner is designing a modern compact shipyard to build cargo ships. The new shipyard which will be named Kvaerner Philadelphia Shipyard, USA, expects to employ about 1,000 multi-skilled employees. Kvaerner will receive approximately

\$480 million in local, state and federal funding for the design and refurbishment of the shipyard (including two drydocks) and to retrain local employees. Kvaerner has agreed to purchase the first three containerships constructed at the new shipyard with the first containership expected to be delivered in 2001.

National Defense Reserve Fleet

MARAD's National Defense Reserve Fleet (NDRF) is a program which allows the storage and orderly disposal of obsolete or excess government owned vessels. At the beginning of FY 1998, the NDRF consisted of 217 merchant ships and 90 vessels held for other Government agencies, primarily the U.S. Navy, on a reimbursable basis. Many of these ships can be activated to meet shipping requirements of the U.S. in the event of a national emergency.

A key sealift shipping program that exists as a subset of the NDRF is the Ready Reserve Force (RRF). At the beginning of FY 1998 the RRF was composed of 96 oceangoing cargo ships that are maintained to keep their certificates of inspection current. Vessels in the RRF are owned, managed and operated by the Department of Transportation's Maritime Administration by authorization found in the Merchant Ship Sales Act of 1946. In peacetime, RRF ships are generally held in various stages of readiness in the U.S., and are periodically activated in support of Department of Defense (DOD) exercises. In 1990, the first mass activation of the RRF took place when 79 RRF ships were activated in support of Operation DESERT SHIELD/STORM. By the end of the conflict, the RRF had transported 22 percent of all military supplies, including 45 percent of the ammunition to the Persian Gulf.

The NDRF is funded by DOD through the National Defense Sealift Fund (NDSF). The budget is typically about \$250 million for maintenance and operations. MARAD retains ownership, custody, maintenance and operational readiness

responsibility for the fleet. In order to reduce existing surge RO/RO shortfall DOD is pursuing expansion upgrades of selected RRF RO/ROs to obtain an additional 5,980 square meters of lift by the year 2002. A DOD directive has been given to retire 19 of the older breakbulk ships from the RRF to the NDRF by FY 2002, as the Navy's newly constructed/converted military sealift ships (T-AKR's), which are large medium speed RO/RO's, become available.

RRF ship maintenance and repair is conducted primarily in commercial U.S. yards, with U.S. marine equipment and service suppliers. The RRF uses commercial ship managers who are authorized to do ship maintenance and repair contracting according to commercial practices. MARAD utilizes a combination of surplus government piers and commercial piers to meet its vessel layberthing needs. Lessons learned from Operation DESERT SHIELD/STORM indicated a need to berth more RRF ships in a higher state of readiness, some with full time reduced operating status (ROS) crews aboard. MARAD currently has a total of 65 RRF ships outported. MARAD has received 64 no-notice activations from DOD since the 1990/91 Gulf War and all but two ships met or exceeded the assigned availability time. Through March 31, 1998, prepositioned RRF ships have accumulated over 10,492 operational days, while achieving a 99.5 percent full mission capable readiness rating. MARAD will continue to rely heavily on the U.S. maritime industrial base for the RRF program which is now the single largest source of national emergency contingency surge shipping in the world.

Passenger and Cruise Vessels

In 1997, U.S. shipbuilders were not involved in any major construction or conversion projects of oceangoing passenger ships. Numerous ship repair companies, however, did receive a number of work assignments involving the maintenance and repair of major oceangoing passenger ships. The following are some examples of passenger ship repair work performed U.S. ship repair yards in 1997:

Baltimore Marine Industries, Inc., (ex. Bethlehem Steel - Sparrows Point Yard) received the Norwegian Cruise Line vessel *Royal Majesty* for drydocking, repair of structural damage, and blasting and painting of the hull. The vessel was renamed *Norwegian Majesty* upon its delivery to Norwegian Cruise Line after completion of the repairs.

Norfolk Shipbuilding and Drydock Corp (NORSHIPCO) received worked on a number of cruise vessels including P&O's *Royal Princess*, CARNIVAL'S *Fascination* and *Inspiration*, RCI's *Song of America*, Celebrity's *Century* and Holland America's *Rotterdam*.

Atlantic Marine performed work on Royal Caribbean's *Monarch of the Seas* and *Majesty of the Seas*.

Cascade General/Portland Ship Yard completed repairs on several cruise ships including guarantee work on RCI's *Rhapsody of the Seas*. Work involved replacing one of its main electric propulsion motors.

Todd Pacific Shipyards performed repair work on Holland America Line cruise ships including the *Noordam*, *Nieuw Amsterdam* and the *Veendam*.

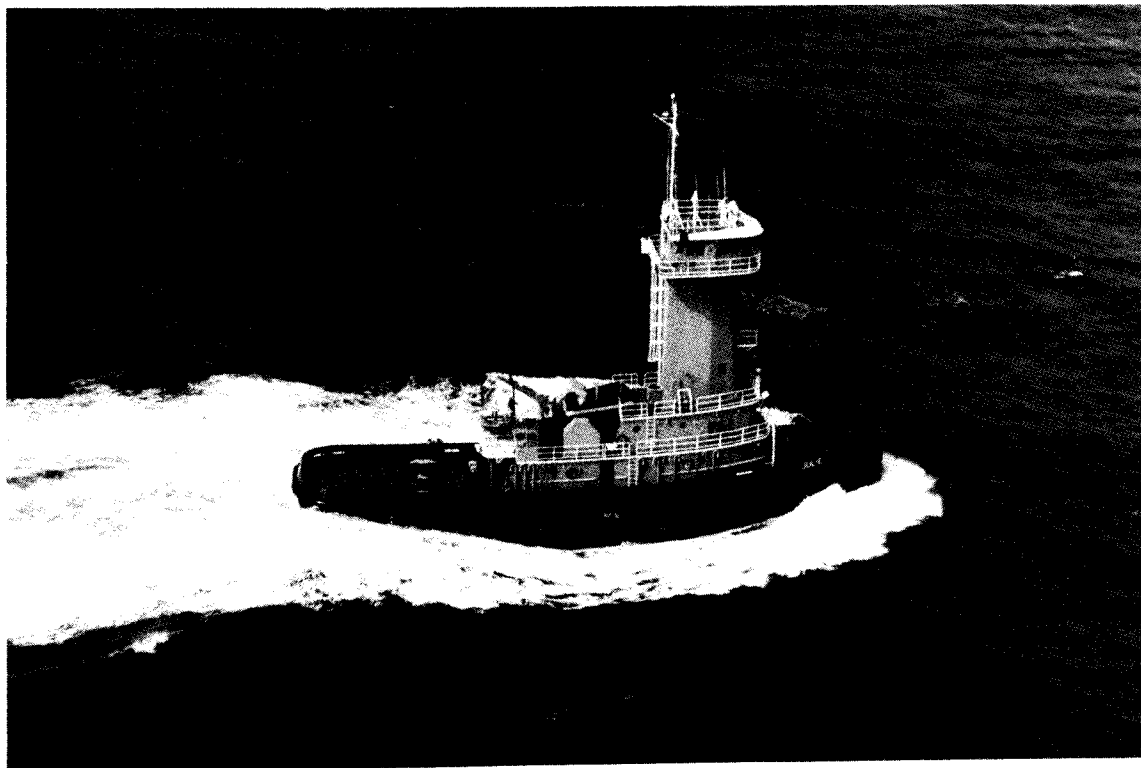
In addition, a few U.S. shipyards were still involved the design, construction and retrofitting of smaller passenger, cruise, dining and gaming vessels. Some examples of U.S. shipyard involvement include:

Atlantic Marine, Inc's., Jacksonville, FL., shipyard delivered its 13th gaming vessel built in the last six years. The *Majestic Star* a 100 meter long vessel with 2,200 gaming positions will be home ported in Indiana.

Bender Shipbuilding and Repair Co., Inc., Mobile, AL, retrofitted a 137 meter U.S.-flag entertainment vessel, *Latin Quarter*, for operation in Florida's cruise-to-nowhere trade. The ship will accommodate nearly 3,000 patrons, crew and staff.

Second-Tier Shipyards

The second-tier shipyards, those small and medium-size shipyards that are primarily engaged in supporting inland waterway and coastal operators, comprise an



important segment of the U.S. shipbuilding and repair industry. Their activity consists of new construction and repair of smaller-type vessels such as barges, tug and towboats, off-shore crew and supply boats, ferries, casino boats, fishing boats, patrol boats, military and non-military, fire and rescue vessels, as well as oil rig construction, conversion and repair.

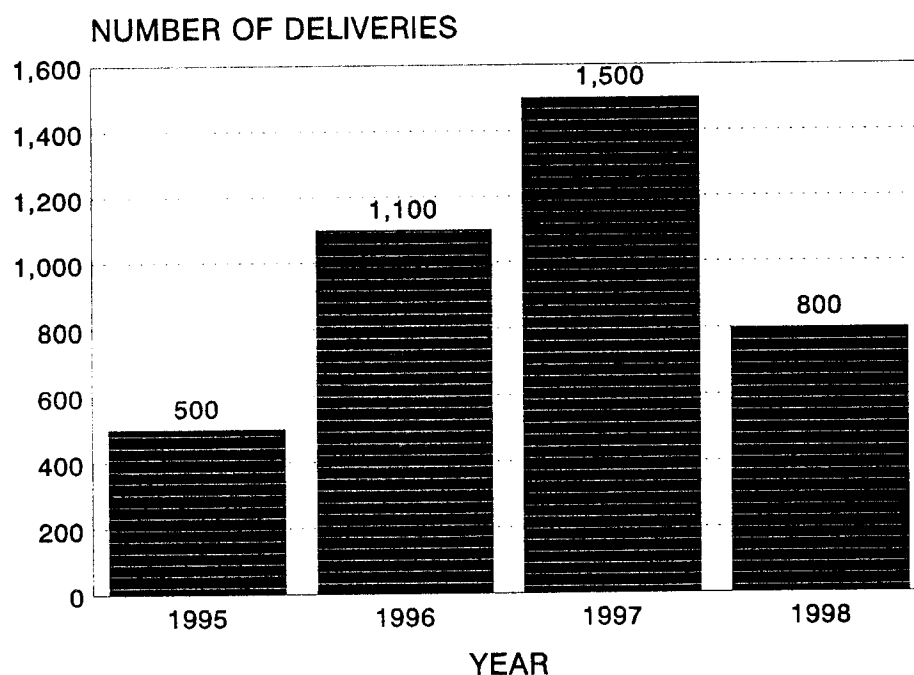
Dry Cargo Barges

The last few years witnessed a surge in construction orders for new dry cargo barges. The surge in orders for dry cargo barges was the result of numerous factors: the strong demand for barges created by the rise in commodities shipments, the projections of future increases in commodity flows, the age of the barge fleet, the rapid rate of retirements of old dry cargo barges (some 400-plus annually), as well as the attractiveness of the capital markets and healthy corporate capital positions. In addition, it was projected that there would be a significant demand for new barge tonnage to replace the large number of barges that were approaching the end of their useful lives. The following chart (Chart 6) shows the estimated numbers of dry cargo barges delivered over the past four years.

During 1997, according to MARAD data, the second-tier shipyards received orders for over 1,000 dry cargo hopper barges. The Trinity Caruthersville shipyard in Caruthersville, MO, Trinity Madisonville shipyard in Madisonville, LA, and the Trinity Port Allen facility, for example, received orders to build 269, 247 and 300 hopper barges, respectively.

As 1997 came to a close, some industry officials were beginning to express concern regarding the possible existence of excess capacity in the dry cargo market. It was reported that the overcapacity was the result of slower barge

ESTIMATED BARGE DELIVERIES



retirements than had been expected and the "hidden capacity" of the new barges being delivered. It has been estimated that about half of the new barges being delivered had drafts of 4 to 4.3 meters, compared to the industry standard of 3.7 meter draft. This would be equivalent to an approximate 10 to 15 percent increase in barge capacity. The higher-capacity barges represent the "biggest change" in construction in some years. The larger barges can carry 200 to 300 more tons than standard barges, but cost only a little more to build. Some believe that these larger barges will eventually force the less economical, smaller barges into retirement.

In spite of the fears of near term dry cargo barge over capacity, MARAD data indicates that the shipyards ended the year with a strong quarter. Over 30 percent of the hopper barges ordered during 1997 were placed in Gulf Coast shipyards during the final quarter of the year.

Tank Barges

According to the U.S. Army Corps of Engineers, there are about 4,000 tank barges in the inland and coastal trades. The inland tanker barge fleet is aging; it is reported that about 35 percent of these tank barges are over 25 years of age, the typical useful life of a barge. The average age of small tank barges, those less than 9,000 bbl capacity, is about 32 years, while jumbos and semi-integrated unit tow tank barges average around 19 years of age.

Given the double hull requirements of OPA-90 and the advanced age of the tank barge vessel fleet, the outlook for offshore tank barge demand remains bright. It is estimated that 66 of the tank barges in the U.S. Jones Act trades will have to be phased out by 2005 and another 22 tank barges by 2010, because of the double hull requirements of OPA-90.

MARAD estimates that by the year 2000 about 25 percent of the current domestic tank barge fleet, those between 10,000 and 30,000 tons, will be more than 25 years old and more than 8 percent will be at least 30 years old. Some examples of recent orders for double hulled tank barges include:

Jeffboat, Inc., Jeffersonville, IN, received an order from Ashland Petroleum in 1995 for the construction of 42 double-hull barges to replace single-hull barges to comply with OPA-90. The last of the barges were scheduled to be delivered in early 1998.

The Halter Marine Group, Gulfport, MS, received a contract to build three double hull ocean going barges for Bouchard Towing. The largest is a 177 meter by 28 meter notch barge with a capacity for 29,500 metric tons of clean product.

Offshore Supply Vessels (OSV's)

The boom in the Gulf Coast offshore industry has caused a surge in orders for offshore supply vessels (OSV's). As oil drilling companies move further from shore to search in ever deeper waters for oil and gas, larger OSV's with new technology are needed to carry supplies to the rigs, especially large quantities of liquid mud, and to stay around the rigs for prolonged periods in rougher waters. Examples of some of the OSV contracts received during 1997 include:

Bender Shipbuilding and Repair Co., Inc. won a contract to build four 67 meter by 16 meter by 6 meter OSVs for Otto Candies, Inc. over the next two years.

Service Marine Industries (SMI), Morgan City, LA, signed a contract to build a 64 meter by 15 meter OSV for Kim Susan, Inc., Larose, LA.

At the same time, second-tier U.S. shipyards were busy delivering an assortment of OSVs to various owners. Some examples of OSV deliveries during 1997 include:

Steiner Shipyard, Inc., delivered a 67 by 12 by 5 meter OSV to Kim Susan, Inc. This OSV was designed to handle about 450 metric tons of cargo on its 48 by 10 meter cargo deck.

Halter-Lockport delivered the 67 by 13 meter OSV *Ram Charger* to Aries Marine of Lafayette, LA. The *Ram Charger* is equipped with stern-positioned Z-drives and a bowthruster that links up with a Simrad dynamic-positioning system. It was designed to provide the most precise stationkeeping possible.

Halter Moss Point Shipyard delivered the OSV *Seacor Vision*, a 69 by 16 meter with four main engines, massive towing winch and wide aft deck to give her multipurpose capabilities.

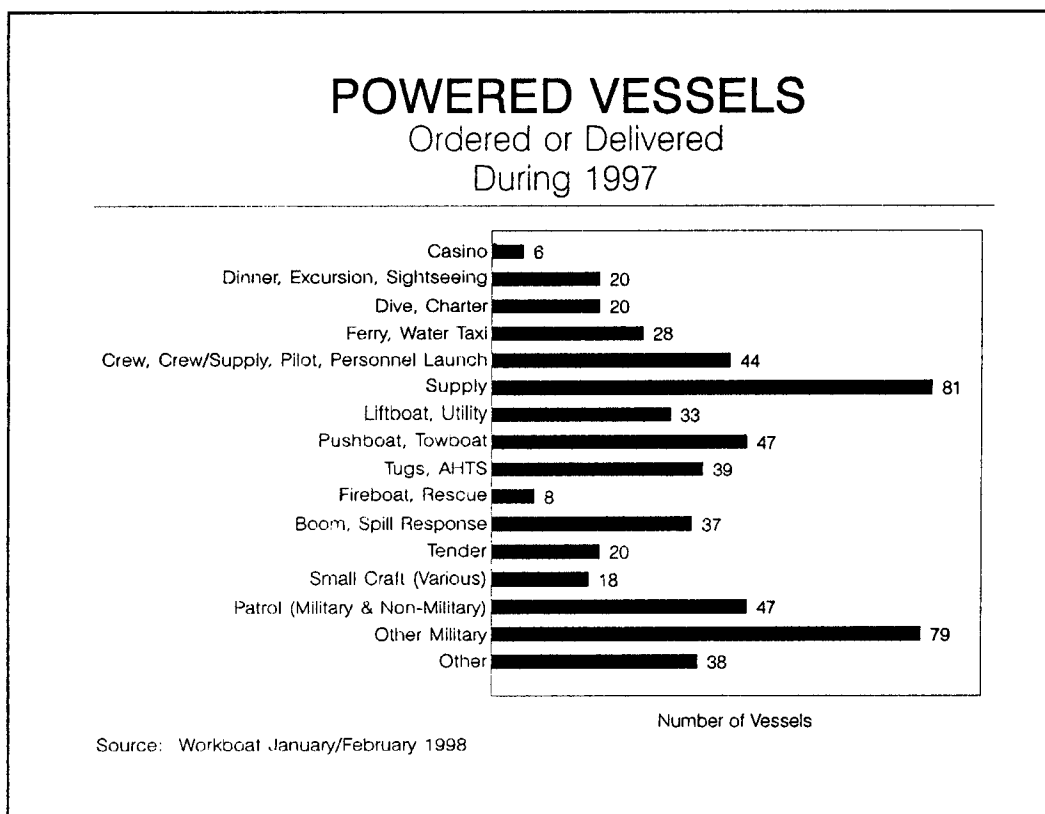
In the closing months of 1997 the OSV market was very active. Contracts to construct a large number of OSV's were announced and options were signed for several big OSVs. Edison Chouest Offshore, Galliano, LA, had a number of OSVs under construction, including a number of 73 meter supply boats and five 67 meter OSVs. All of the supply vessels had extra capabilities, because of the greater

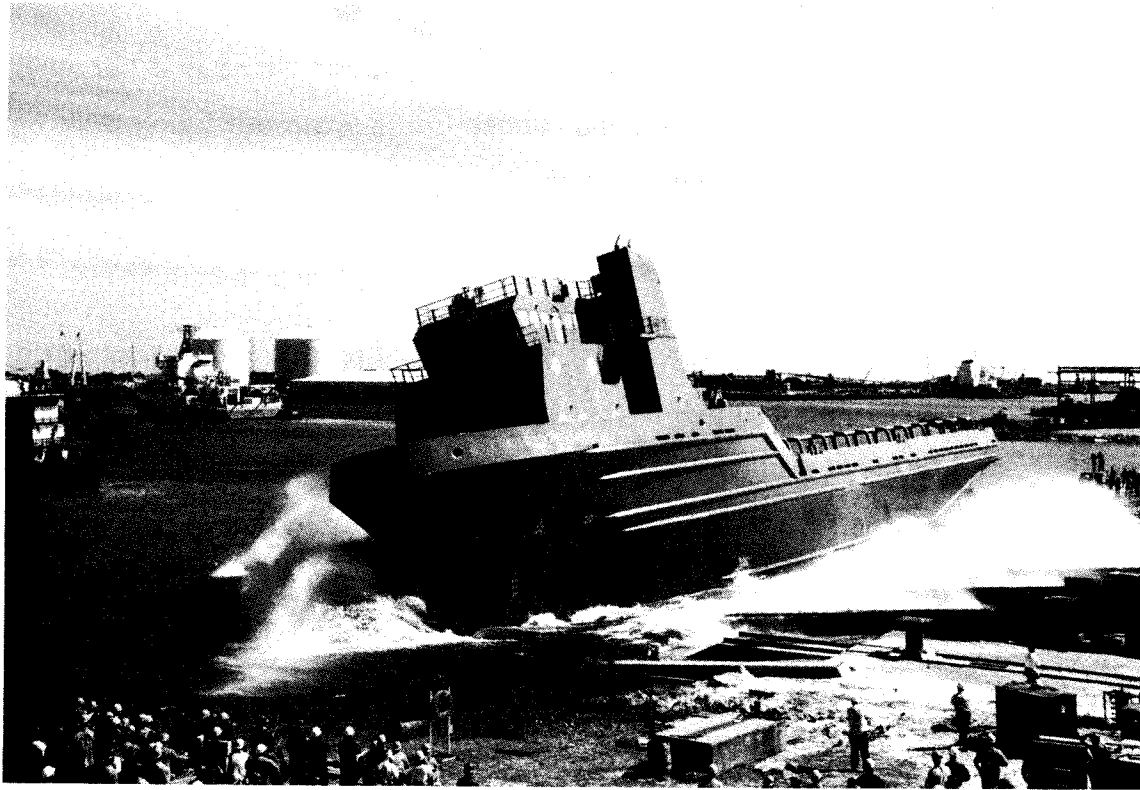
demand for liquid mud, for the hauling of drilling and production risers and because of the exploration and drilling in deeper water. These boats were not being built on speculation, they all had firm employment contracts.

Other Second-Tier Shipyard Activities

According to a survey performed by WorkBoat magazine, the second-tier shipyards received orders for or delivered over 15 percent more vessels during 1997 than the previous year, ranging from a variety of small craft including ferries, casino boats, tugs and small military craft. Chart 7 shows the types and quantities of power driven vessels ordered or delivered from U.S. shipyards during 1997 according to the WorkBoat trade publication.

Chart 7





Export Orders

A number of second-tier shipyards have been active in the international market, building a variety of vessels for different clients. Some examples of recent awards and buildings for the export market include:

Network Marine, Inc. of LA, constructed two aluminum 34 meter by 10 meter crewboats for Abeer Marine Services of Singapore. The boats which were schedule for delivery in January 1998 will be employed in the Persian Gulf.

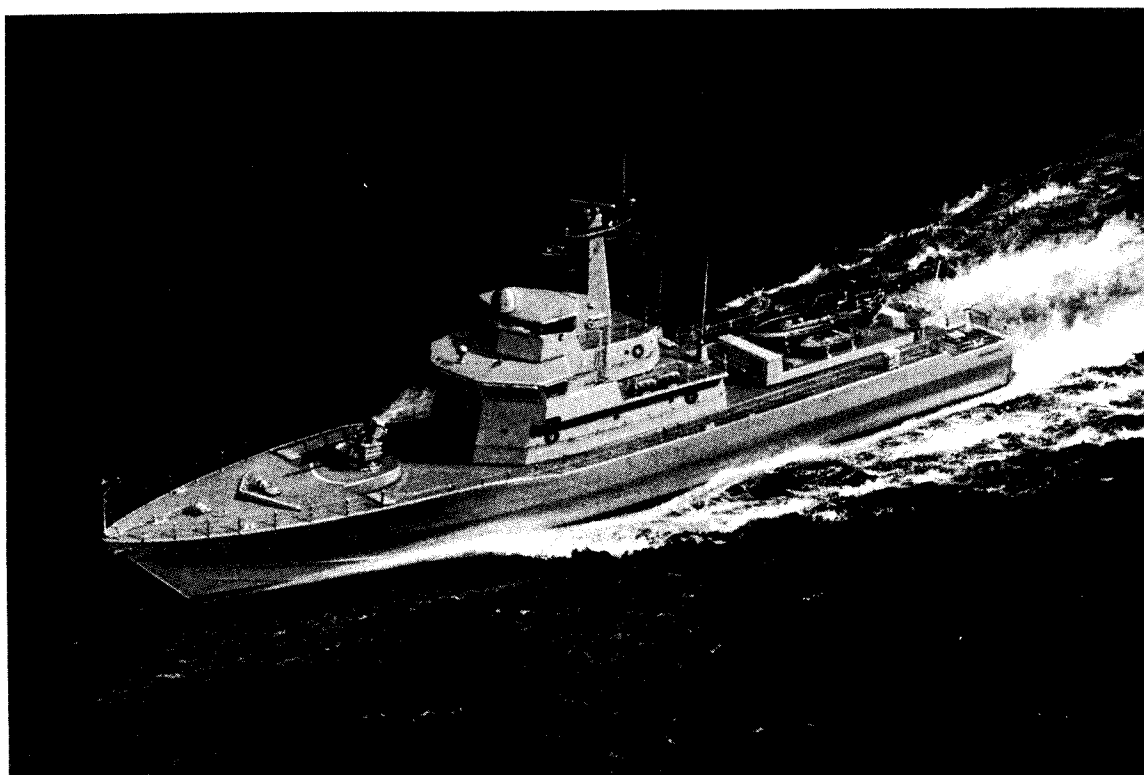
InterOcean Systems, Inc. of CA, delivered the SWATH vessel *Hydri 2* to the Hong Kong government. The 18 meter aluminum vessel will be used for mapping the seafloor.

Halter Marine-Lockport, Lockport, LA, of the Halter Marine Group delivered the *MV AJAX*, the third in a series of nearly identical anchor handling/tug supply (AHTS) vessels, to SURF of Marseille, France. The 66 meter long by 14 meter beam vessel, with accommodations for up to 24 persons, can carry 92 cu. meters of fresh water, 653 cu. meters of fuel and 1010 cu. meters of ballast/drill water. It also has four dry bulk drilling mud tanks that carry 170 cu. meters of mud and it can carry 1,650 barrels of drilling fluids in four liquid mud tanks.

Halter Marine-Lockport also delivered a 3,400 bhp towboat, *Captain Bilbi*, to Stewart & Stevenson Services, Inc of Harvey, LA. The towboat will begin working along the Paraguay, Parana, Uruguay and Alto Parana Rivers and waterways.

SeaArk Marine, Inc. of Monticello, AR, delivered an all-welded aluminum patrol boat for use in the Caspian Sea. The 13 meter 35-knot boat will be used as a command control vessel and for nuclear waste smuggling interdiction.

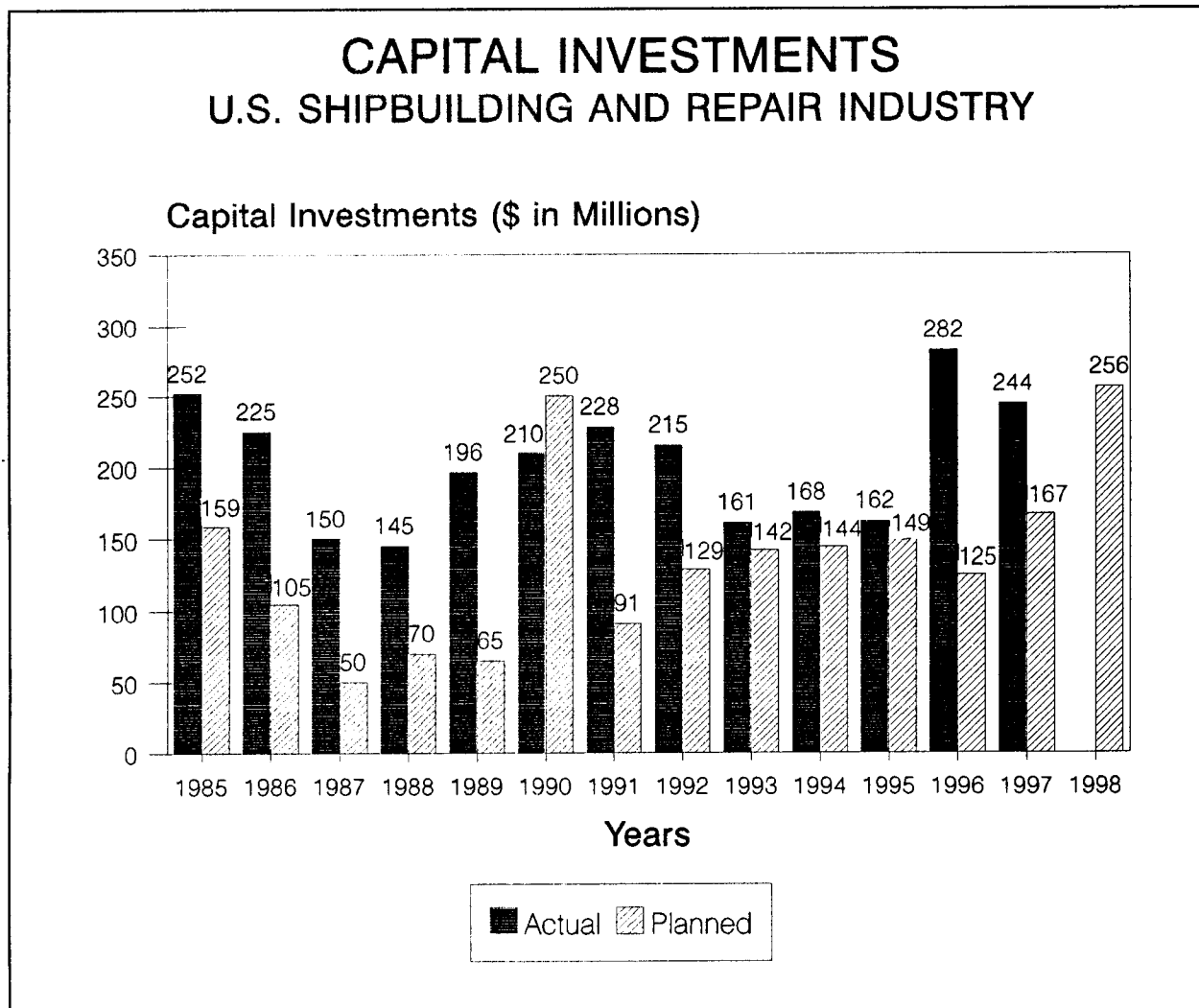
The Halter Marine Group received a \$26 million order from the Bahamas Defense Force for the construction of two 61 meter Bahamas Class offshore patrol craft with options for four 43 meter Nassau class craft for the Royal Bahamas Defense Force (RBDF). If the option for the four 43 meter Nassau Class is exercised, the total contract value would rise to \$62 million.



CAPITAL INVESTMENT

During FY 1997, the U.S. shipbuilding and repair industry invested more than \$244 million in the expansion and upgrade of facilities. Much of this investment went to improve the competitiveness and efficiency of the shipyards. The capital investments were made to update and convert shipyard facilities to be more commercially viable. Examples of recent capital investments are new pipe and fabrication shops, drydock extensions, automated steel process buildings, expanded design programs and military. Many of these improvements have been necessary due to the increased utilization of U.S. shipyards, particularly those along the Gulf Coast, resulting from the resurgence of the oil exploration and production industry in the Gulf of Mexico.

Chart 8



According to data received by MARAD, it is projected that in FY 1998 U.S. shipyards will make capital investment of about \$256 million. The industry's capital investments since 1970 have totaled approximately \$6.2 billion, and actual expenditures since 1985 have consistently exceeded those planned, except in 1990 (Chart 8).

OUTLOOK FOR THE INDUSTRY

According to the current orderbook three U.S. shipyards have orders for the construction of commercial oceangoing vessels: Alabama Shipyard, Inc., has work through mid-1998 completing the construction of one chemical carrier; Avondale Industries, Inc., Shipyards Division, has work through the year 2000 with the construction of two crude carriers for ARCO Marine; and Newport News has work through mid-1999 constructing five product tankers. Ferry construction will provide work at Halter Moss Point Shipyard through early 1998 and at Todd Pacific Shipyards, Inc. through the last quarter of 1998.

The U.S. shipbuilding and repair industry will continue to have as its principal customer, for the foreseeable future, the U.S. Navy shipbuilding program, including conversion and repair work, although the level of activity is expected to be less than that experienced in the previous decade. The FY 1998 Navy budget was \$8.1 billion, 48 percent higher than the \$5.5 billion that was appropriated for FY 1997. This increase was the result of the multi-year procurement authorization for 13 DDG-51 destroyers, the lead-ship of a new class of submarines and an aircraft carrier refueling. The Navy's FY 1998 budget is the largest since the \$11.4 billion funding level in FY 1990. The Navy's projected ship construction budget for FY 1999 is approximately \$6.3 billion. The proposed FY 1999 budget is 22.8 percent less than the FY 1998 budget. In addition to construction orders for new ships, both public and private shipyards will be affected by the FY 1998 Navy ship repair and modernization budget of \$2.0 billion, which is 10.8 percent larger than the FY 1997 budget.

Major Shipyards

The Navy's long-term fleet expansion program, which commenced in the 1980's, had a goal of a modern 600 ship fleet. This fleet expansion program was halted as a result of the end of the Cold War. Reductions in the Navy ship procurement program along with the scheduled and early decommissioning of Navy submarines, combatants and auxiliary vessels, have led to a smaller active U.S. Navy fleet. The Navy's active fleet was reduced by 187 ships between the end of FY 1985 and FY 1997, from 541 ships to 354 ships. This reduction represents a 34.6 percent decline in the size of the Navy's active fleet.

The U.S. Navy's shipbuilding plan for FY 1998-2003 (Table 7) includes the construction and conversion of 48 ships costing about \$39.7 billion. Of the 48 ships, 45 are Shipbuilding and Conversion, Navy (SCN) funded and 3 are National Defense Sealift Fund (NDSF) funded. The 45 SCN ships consist of 32 new construction ships, 2 nuclear aircraft carrier refuelings, 7 ship conversions and 4 service life extensions (SLEPs). The 3 NDSF ships are the construction of 3 military sealift ships (T-AKRs). The Navy's shipbuilding program represents a 69.4 percent reduction in the quantity of ships being procured, an average of 5.8 ships per year compared to the average of 19 ships annually for Navy programs during the 1980's. SCN funding accounts for \$39.4 billion of the \$39.7 billion SCN budget, NDSF funding accounts for \$251.4 million. New military sealift vessels have been contracted for in each fiscal year since 1993 for a total, to date, of thirteen new vessels. This military sealift construction program is planned to conclude after the procurement of 14 new vessels.

Navy ships require many subcontractors to assist in the construction and installation of the multitude of complex shipboard systems (weapons, radar, etc.).

Table 7

NAVY SHIPBUILDING PLAN Fiscal Years 1998 - 2003							
Ship Class	1998	1999	2000	2001	2002	2003	TOTAL
New Construction							
CVN	-	-	-	-	1	-	1
NEW ATTACK SUB (NSSN)	1	1	-	1	1	-	4
DDG 51	3	3	3	4	1	3	17
LPD 17	-	1	2	2	2	2	9
AOE	-	-	-	-	-	1	1
Sub-Total	4	5	5	7	5	6	32
Conversion/Major Overhaul							
CG (Conversion)	-	-	-	-	1	6	7
CVN (Refueling)	1	-	-	1	-	-	2
T-AE (Conversion)	-	-	-	-	1	1	2
T-AFS (Conversion)	-	-	-	-	1	1	2
Sub-Total	1	-	-	1	3	8	13
TOTAL SCN	5	5	5	8	8	14	45
Other Funding							
T-AKR (Military Sealift)	2	1	-	-	-	-	3
Sub-Total	2	1	-	-	-	-	3
GRAND TOTAL	7	6	5	8	8	14	48

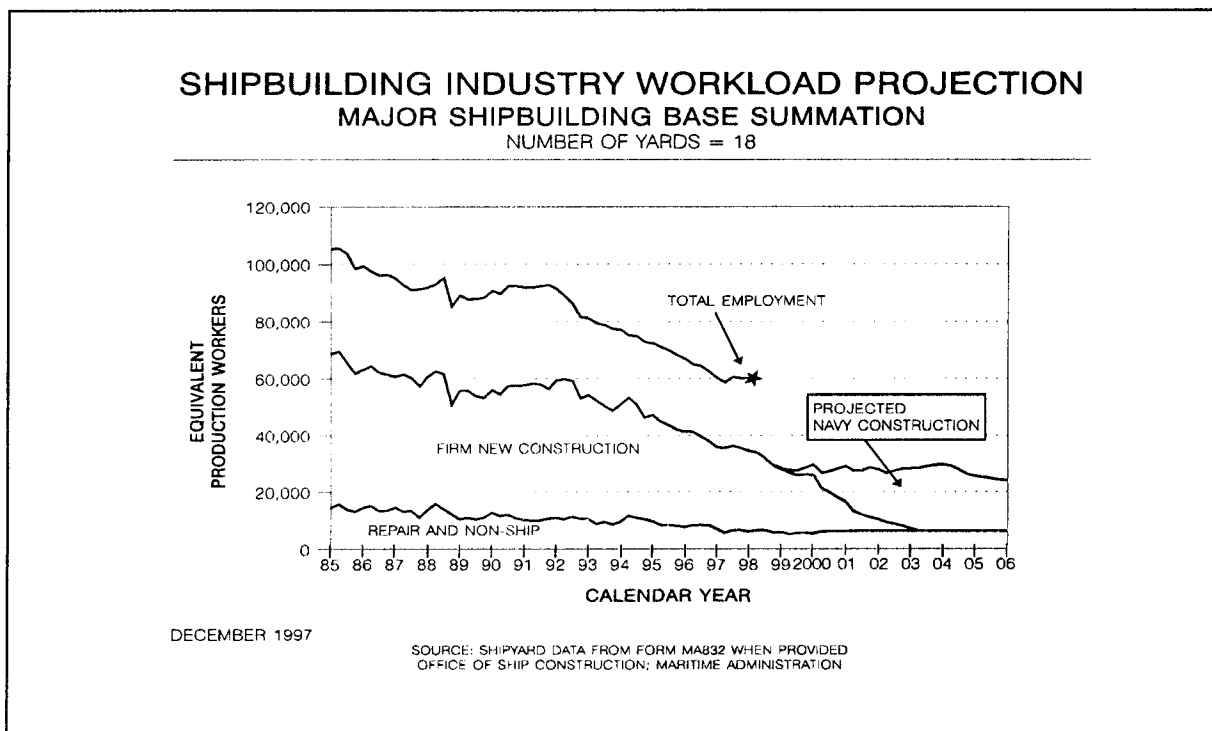
These complex systems dramatically increase the total cost of military ships. The shipyard contract value is only about one-third of the \$39.7 billion budget; the remainder goes to such items as Government-furnished equipment placed aboard the vessels and to Government program costs.

The major shipbuilders have turned to the export market to sell their expertise in the construction of military combatants. It has been projected that foreign demand for

naval vessels, over the next 20 years, would be about 180 destroyers, frigates and corvettes. Asia was expected to generate the greatest demand followed by Western Europe, the Middle East, Eastern Europe and Latin America. The Asian market maybe somewhat weaker than expected as a result of the economic, financial and political changes that have taken place.

The major full service shipyards, those that comprise the MSB, for the foreseeable future, will continue to depend on Navy shipbuilding and repair work as their primary source of employment. Since mid-1992, the major shipyards have experienced a sharp decrease in employment, a consequence of deep reductions in new Navy shipbuilding orders, the decline in complex Navy repair activity and the absence of significant orders for commercial shipbuilding. The Navy's shipbuilding plan for FY 1998 - 2003 is expected to halt the decline in shipyard employment and will assist in leveling out the workforce out through the end of 2006. The shipbuilding industry workload projection (Chart 9) reflects the manpower requirements for the commercial shipbuilding orderbook as of December 1997, and the proposed Navy FY 1998-2003 shipbuilding plan.

Chart 9



Oil Pollution Act of 1990 (OPA-90)

The Oil Pollution Act of 1990 (OPA-90) established the requirement that all tankers entering U.S. ports by the year 2015 have double-hulls. OPA-90 was seen as a great step in reducing the environmental danger from shipping petroleum and petroleum products, as well as an opportunity for the U.S. shipbuilding industry to re-enter the commercial shipbuilding market with the construction of double-hulled tankers. The U.S. shipbuilding industry has taken numerous steps to improve its ability to capture a comfortable percentage of the worldwide demand for replacement tonnage in the world tanker fleet.

MARAD data indicates that about 1,500 tankers involved in foreign trade--or about one-third of the world's petroleum tanker fleet--enter U.S. ports. It is difficult to determine the number of tankers that will be rebuilt, scrapped, or constructed as a result of enactment of OPA-90, but what is known is that a double-hull will be required by the year 2015 for a tanker to enter a U.S. port.

World Tanker Demand

More than half of the tankers in the world's operational fleet by deadweight tonnage were built prior 1980. At the end of 1995, according to Clarkson's Shipping Review and Outlook, 31 percent of the VLCC tankers in the world fleet were over 20 years old. By September 1996, this percentage had climbed to 37.4 percent, indicating a continuing deterioration in the age of the VLCC fleet. Clarkson reported that the fleet of smaller size tankers, "Aframax" tankers, those in the 80,000 - 120,000 dwt range, also continued to deteriorate in age. At the end of 1995, 17.3 percent of these tankers were over 20 years old. By September 1996, the percentage had climbed to 22 percent.

By the year 2000, about 40 percent of the current world tanker fleet will be more than 25 years old, and over 20 percent will be at least 30 years old. This is the

result of the concentration of tankers that were built between 1972 and 1977. Many of these tankers will have to be replaced with new tonnage during the remainder of the 1990's and early in the next century in order to be able to enter U.S. ports.

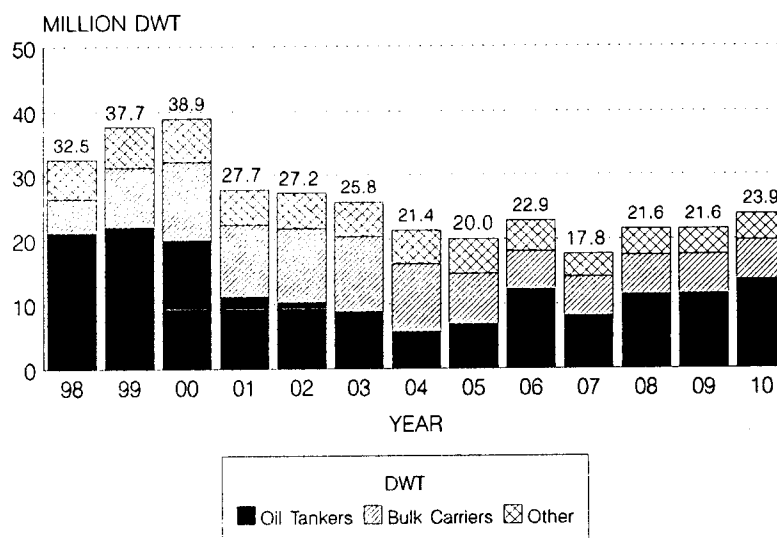
U.S. and foreign shipyards are seeing an influx of orders for double-hulled tankers, a result of the requirements of OPA-90. These orders should be the catalyst for future double-hulled tanker orders incorporating design improvements and advanced electronic features. U.S. shipyards continue to make significant capital investments to improve their facilities and increase their productivity in order to participate in the expected opportunities forecasted for the next decade including Jones Act tanker tonnage resulting from OPA-90.

Shipbuilding analysts expect a significant rise in new orders for commercial ships into the next century. This increase in new orders emanates from projections of high growth in the seaborne trade for oil and dry bulk cargoes, as well as the continued demand for replacement ships due to the aging of the world fleet. Drewry Shipping Consultants, Ltd. projected that between 1998-2010 the total new worldwide demand for new tonnage would be approximately 339.0 million dwt (Chart 10). Drewry forecast that the greatest demand will arise between 1999 - 2000, when more than 76.6 million dwt will be required. In order to achieve this level of demand, a significant number of orders will have to occur for tankers and dry bulk carriers.

Orders for new tankers are expected to increase during the 1998 - 2000 period followed by a decrease in orders during the first half of the next decade (Table 8). The U.S. shipbuilding industry has already benefitted from the increased demand

Chart 10

WORLD NEWBUILDING DEMAND PROJECTED ORDERS



for double-hulled tankers generated by OPA-90 receiving orders for 11 new tankers (9 product and 2 chemical tankers) and 4 major reconstructions.

Table 8

OIL TANKER NEWBUILDING DEMAND 1998 - 2004 (Million DWT)								
Size (dwt)	1998	1999	2000	2001	2002	2003	2004	Total
10,000 - 45,000	1.8	1.9	2.0	0.5	1.4	1.2	1.4	10.2
45,000 - 90,000	1.9	3.0	2.8	1.6	2.4	3.1	2.8	17.6
90,000 - 175,000	3.3	4.8	2.7	0.9	1.4	0.8	0.3	14.2
Greater than 175,000	14.1	12.3	12.4	8.2	5.1	3.7	1.2	57.0
Total	21.1	22.0	19.9	11.2	10.3	8.8	5.7	99.0

Organization for Economic Cooperation and Development (OECD)

In December 1994, the world's key shipbuilding nations (the United States, Japan, Korea, the European Union and Norway) signed an agreement to eliminate shipbuilding subsidies and other trade distorting practices. The agreement was negotiated under the auspices of the Organization for Economic Cooperation and Development (OECD).

The accord eliminates virtually all direct and indirect subsidies, establishes common rules for government assisted financing, creates an injurious pricing mechanism to prevent ship dumping, and provides a binding dispute settlement mechanism. When the agreement takes effect, the Title XI program will be modified to meet its terms, which provides for a maximum repayment period of 12 years and a maximum financing coverage of 80 percent. The current Title XI program allows for a maximum 25 year repayment period and a maximum financing coverage of 87.5 percent.

The OECD agreement fulfills a long-sought goal of the U.S. which President Clinton pledged to achieve--to ensure fair international competition for U.S. shipyards. The agreement is expected to be of great help in restoring the competitiveness of American shipbuilding in the world market, since it requires other countries to give up the much more substantial support they have provided to their yards, while relatively modest changes will be required in our programs.

Though negotiation of the OECD agreement began as a United States initiative, there has been a protracted disagreement within the U.S. shipbuilding industry over its utility. The large military-oriented yards have opposed the agreement, while small and medium sized yards have supported it. The Administration and Congressional supporters of the agreement have sought to address critics' concerns through compromise proposals. Various bills to implement the agreement

have been considered, but Congress must still act on the legislation. All other parties have ratified the agreement, but it will not enter into force unless the United States also approves it by passing implementing legislation.

Second-Tier Shipyards

The second-tier shipyards are rich with orders for barges, offshore supply vessels, tugs and other shallow draft vessels. Several Gulf Coast yards have been expanding their facilities, as well as business lines, in an attempt to take full advantage of the thriving Gulf Coast oil and gas markets. The current environment, very strong demand and finite capabilities, reportedly has the industry turning away some prospective business opportunities because of the problems caused by the shortage of skilled labor.

The second tier shipyards have seen a growth opportunity in the rig business and have moved aggressively into this market. The industry observed that the rig fleet was aging and saw a tremendous opportunity in an expected surging demand for rig repairs and conversions. The future portends a healthy construction, repair and conversion business for this industry in the years ahead.

FACTORS AFFECTING FUTURE U.S. INDUSTRY GROWTH

The availability of long-term Title XI guarantees for eligible vessels constructed or reconstructed in U.S. shipyards and for shipyard modernization projects, together with the extension of a MARITECH program, continue to be the major factors in the revitalization of commercial shipbuilding in U.S. shipyards. The U.S. shipbuilding industry needs to make significant strides in building efficient ships at lower prices, with on time deliveries, for the Jones Act Trade, in order to demonstrate to the international market an ability to produce quality commercial vessels. The knowledge and experience gained during the past few years, coupled with a successful domestic building program, should assist the U.S. shipbuilding industry

in securing additional newbuilding tonnage, generated as a result by OPA-90, the projected growth in world trade and the projected demand for replacement tonnage.

The U.S. shipbuilding industry has and continues to make significant capital investments to enhance its competitive posture through productivity improvements. Through the adoption of and the development of new technology, supported by financing guarantee programs, U.S. shipyards can develop new advanced ship designs, new marketing strategies and new more productive shipyard processes, which will enable them to better compete in the world shipbuilding market. The Federal Government, suppliers, shipyard management and organized labor continue to work together to achieve increased market penetration through the cost effective production of quality ships and products.

The industry sees opportunities in the years ahead. A sharp focus on product planning, production and marketing should afford the industry a chance to demonstrate achievement first in the domestic market and then in the more competitive foreign commercial shipbuilding arena.

Daniel Seidman and Elizabeth Gearhart, Office of Ship Construction, Maritime Administration, U.S. Department of Transportation, (202) 366-1888, June 1998.

